

In the abstract:

The present invention provides metal ion affinity peptides, fusion proteins comprising metal ion affinity peptides, and polynucleotides encoding the fusion proteins.

A feature of the subject invention is that the metal ion affinity peptide has a formula selected from the group consisting of:

formula 1: (His-X₁-X₂)_{n1}-(His-X₃-X₄-X₅)_{n2}-(His-X₆)_{n3}, wherein each of X₁ and X₂ is independently an amino acid with an aliphatic or an amide side chain, each of X₃, X₄, X₅ is independently an amino acid with a basic side chain (except His) or an acidic side chain, each X₆ is an amino acid with an aliphatic or an amide side chain, n1 and n2 are each independently 1-3, and n3 is 1-5;

formula 2: (His-Asn)_n, where n=3 to 10; and

formula 3: (His-X₁-X₂)_n, wherein each of X₁ and X₂ is an amino acid having an acidic side chain, and n=3 to 10.

The invention further provides recombinant vectors comprising subject polynucleotides, and host cells comprising the recombinant vectors. The invention further provides methods and kits for purifying a fusion protein comprising a metal ion affinity peptide.